AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of the claims in the application:

1-24. (Canceled)

25. (Currently Amended) A process for producing a 1,4-di-substituted diacetylene polymer comprising the step of irradiating a solution consisting essentially of ~~soluble~~ dissolved 1,4-di-substituted diacetylene polymer in a polar solvent with a concentration of 10 to 500 mg of 1,4-disubstituted diacetylene polymer/100 ml of polar solvent, with laser light having a wavelength within the range of 250 to 1200 nm, to cause a photodegradation reaction of said polymer ~~without mixing a sensitizer~~, wherein the irradiation time is from 10 seconds to 180 minutes; and wherein said 1,4-disubstituted diacetylene polymer produced by the process is soluble in an organic solvent and is composed of repeating units represented by the general formula =CR-C≡C-CR'=, (wherein R and R' represent identical or different monovalent organic substituents,) and has an average degree of polymerization of 4 to 200 and a ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight corresponding to said average degree of polymerization (Mn) of 1.1 to 5.0, wherein the organic substituents R and R' are selected from any of the following:

$(CH_2)_mOCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mOSO_2C_6H_4CH_3$ (wherein m represents an integer within the range of 3 to 6) and

$(CH_2)_mOCONHCH_2CONHC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10).

26. (Currently Amended) A process for producing a 1,4-di-substituted diacetylene polymer comprising the step of heating a solution consisting essentially of ~~soluble~~ dissolved 1,4-di-substituted diacetylene polymer in a polar solvent with a concentration of 10 to 500 mg of 1,4-disubstituted diacetylene polymer/100 ml of polar solvent to a temperature of 100 to 300°C to cause thermal degradation of said polymer ~~without mixing a sensitizer~~, wherein the heating time is from 30 minutes to 5 hours; and

wherein said 1,4-disubstituted diacetylene polymer produced by the process is soluble in an organic solvent and is composed of repeating units represented by the general formula =CR-C≡C-CR'=, (wherein R and R' represent identical or different

monovalent organic substituents,) and has an average degree of polymerization of 4 to 200 and a ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight corresponding to said average degree of polymerization (Mn) of 1.1 to 5.0, wherein the organic substituents R and R' are selected from any of the following:

$(CH_2)_mOCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mOSO_2C_6H_4CH_3$ (wherein m represents an integer within the range of 3 to 6) and

$(CH_2)_mOCONHCH_2CONHC_nH_{2n+1}$ (wherein m represents an integer with the range of 3 to 6, and n represents an integer within the range of 1 to 10).

27. (Previously Presented) A 1,4-disubstituted diacetylene polymer which is produced according to the process of claim 25.

28. (Previously Presented) A 1,4-disubstituted diacetylene polymer which is produced according to the process of claim 26.

29. (Previously Presented) A composite composition in which the 1,4-di-substituted diacetylene polymer according to claim 25 is compatible with a transparent sheet.

30. (Previously Presented) A composite composition in which the 1,4-di-substituted diacetylene polymer according to claim 26 is compatible with a transparent sheet.

31. (Previously Presented) The composite composition as claimed in claim 29 wherein the transparent sheet is selected from polyester, polycarbonate, polyurethane, polyamide, polysulfone, and polycyclopentadiene.

32. (Previously Presented) The composite composition as claimed in claim 30 wherein the transparent sheet is selected from polyester, polycarbonate, polyurethane, polyamide, polysulfone, and polycyclopentadiene.

33. (Previously Presented) The composite composition as claimed in claim 29 wherein the transparent sheet is selected from an aromatic vinyl resin and acrylic resin.

34. (Previously Presented) The composite composition as claimed in claim 30 wherein the transparent sheet is selected from an aromatic vinyl resin and acrylic resin.

35. (Previously Presented) The composite composition as claimed in claim 29 wherein the transparent sheet is selected from photosetting resin and thermosetting resin.

36. (Previously Presented) The composite composition as claimed in claim 30 wherein the transparent sheet is selected from photosetting resin and thermosetting resin.

37. (Currently Amended) A composite composition with an inorganic polymer obtained by reacting the 1,4-di-substituted diacetylene ~~polydiacetylene~~ polymer according to claim ~~25~~ 27 in a polycondensation reaction with a metal alkoxide represented by alkoxysilane.

38. (Currently Amended) A composite composition with an inorganic polymer obtained by reacting the 1,4-di-substituted diacetylene ~~polydiacetylene~~ polymer according to claim ~~26~~ 28 in a polycondensation reaction with a metal alkoxide represented by alkoxysilane.

39. (Previously Presented) An optical part obtained by using a film, sheet or three-dimensional molding based on the composition according to claim 37 and in which the 1,4-di-substituted diacetylene polymer is compatible with a transparent sheet.

40. (Previously Presented) An optical part obtained by using a film, sheet or three-dimensional molding based on the composition according to claim 38 and in which the 1,4-di-substituted diacetylene polymer is compatible with a transparent sheet.

41. (Previously Presented) An optical part obtained by using the composite composition according to claim 29 as a surface layer.

42. (Previously Presented) An optical part obtained by using the composite composition according to claim 30 as a surface layer.

43. (Previously Presented) The optical part according to claim 41 wherein the composite composition is used in transparent sheets, microspherical resonators and optical waveguides.

44. (Previously Presented) The optical part according to claim 42 wherein the composite composition is used in transparent sheets, microspherical resonators and optical waveguides.

45. (Previously Presented) A process for producing the 1,4-disubstituted di-diacetylene polymer as claimed in claim 25 wherein laser light has a wavelength with the range of 550 to 900 nm.

46. (New) A process according to claim 25, wherein said dissolved 1,4-di-substituted diacetylene polymer in a polar solvent has a concentration of 50 to 200 mg of 1,4-disubstituted diacetylene polymer/100 ml of polar solvent.

47. (New) A process according to claim 26, wherein said dissolved 1,4-di-substituted diacetylene polymer in a polar solvent has a concentration of 50 to 200 mg of 1,4-disubstituted diacetylene polymer/100 ml of polar solvent.